

We Claim:

1. A hydraulic torque wrench fastener tightening system having a double acting cylinder that turns a socket of the wrench upon an advance of the cylinder and ratchets backward over the socket without turning the socket upon a retract of the cylinder in which, in response to an operator actuating an advance actuator and holding it actuated, the system alternately: (a) applies a pressure to the cylinder to advance the cylinder until a programmable set pressure is reached; and (b) applies a pressure to the cylinder to retract the cylinder; such that when a desired torque of the fastener is reached the alternation cycle between processes (a) applying a pressure to the cylinder to advance the cylinder and (b) applying a pressure to the cylinder to retract the cylinder is reduced in duration and thereby indicates to the operator that the fastener has reached the desired torque.
2. A hydraulic torque wrench fastener tightening system as claimed in claim 1, wherein the process of (b) applying a pressure to the cylinder to retract the cylinder is terminated when a set pressure is reached.
3. A hydraulic torque wrench fastener tightening system as claimed in claim 1, wherein the indication to the operator that the fastener has reached the desired torque is an audible indication.
4. A hydraulic torque wrench fastener tightening system as claimed in claim 1, wherein the indication to the operator that the fastener has reached the desired torque is a visual indication.
5. A hydraulic torque wrench fastener tightening system as claimed in claim 1, wherein after the fastener has reached the desired torque the system shuts off a motor that drives a pump of the system after a certain time period following reaching the desired torque.
6. A hydraulic torque wrench fastener tightening system as claimed in claim 1, wherein the pump is automatically shut off when the fastener has reached the desired torque.

7. A hydraulic torque wrench fastener tightening system as claimed in claim 6, wherein the pump is shut off by the system in response to a reduction in the duration of the alternation cycle between processes (a) applying a pressure to the cylinder to advance the cylinder and (b) applying a pressure to the cylinder to retract the cylinder.

8. A hydraulic torque wrench fastener tightening system as claimed in claim 1, wherein the system stores information to convert pressure measurements to torques applied by the wrench.

9. A hydraulic torque wrench fastener tightening system as claimed in claim 1, wherein the system includes a user adjustable pressure relief valve.

10. A hydraulic torque wrench fastener tightening system as claimed in claim 1, wherein the system has a port to communicate with an external computer.

11. A hydraulic torque wrench fastener tightening system as claimed in claim 1, wherein the pump is shut off if the advance actuator is not actuated for a period of time.